

What Is Claimed Is:

1. A method for improving a resolution of an A/D converter, comprising:  
receiving an analog signal;  
superposing an auxiliary signal on the analog signal, whereby a superposed signal is produced;  
sampling the superposed signal using an S/H device, whereby sampled values are produced;  
performing an A/D conversion of the sampled values, whereby a number of digital output values are produced; and  
determining a high-resolution digital output value based on the digital output values.
2. The method as recited in Claim 1, wherein:  
the high-resolution digital output value is determined by averaging the digital output values.
3. The method as recited in Claim 1, wherein:  
the high-resolution digital output value is determined from a ratio of one of those of the digital output values having a higher bit value and those of the digital output values having a lower bit value to a total number of the digital output values that were input.
4. The method as recited in Claim 1, wherein:  
the auxiliary signal includes a periodic signal.
5. The method as recited in Claim 1, wherein:  
the auxiliary signal has a peak-to-peak amplitude that is greater than or equal to a resolution of a least significant bit of the digital output values.
6. The method as recited in Claim 1, wherein:  
the auxiliary signal includes one of a sine wave signal and a square-wave signal.

7. The method as recited in Claim 1, wherein:
  - a sampling frequency at which the superposed signal is sampled by the S/H device is selected in such a way that a beat is produced.
8. An A/D converter system, comprising:
  - a device for superposing an auxiliary signal on an analog signal, whereby a superposed signal is produced;
  - an S/H device for sampling the superposed signal, whereby sampled values are produced;
  - an A/D converter that converts the sampled values into binary output values; and
  - a processing unit that determines a high-resolution output value based on the binary output values.
9. The A/D converter system as recited in Claim 8, wherein:
  - the processing unit determines the high-resolution output value by averaging the binary output values.
10. The A/D converter system as recited in Claim 8, wherein:
  - the processing unit determines the high-resolution digital output value from a ratio of one of those of the digital output values having a higher bit value and those of the digital output values having a lower bit value to a total number of the digital output values that were input.
11. The A/D converter system as recited in Claim 8, wherein:
  - the device for superposing the auxiliary signal includes one of a capacitor and a current source.